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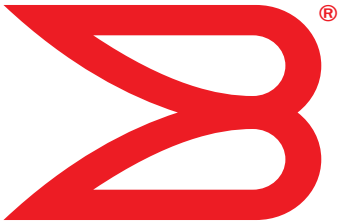

Brocade SAN Analytics Management Pack

for VMware vCenter Operations Management Suite

User's Guide

Version 1.0

BROCADE

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How this document is organized

This document is organized to help you find the information that you want as quickly and easily as possible. This document supports the Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite.

The document contains the following components:

- Chapter 1, "Installation," provides installation requirements and instructions.
- Chapter 2, "Resources," provides information about the resources available for the Brocade SAN Management adapter.
- Chapter 3, "SAN Event Handling," provides information about the events that display and configuring event handling.
- Chapter 4, "SAN Dashboards," provides using and create dashboards.

Supported software

The Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite is supported with the following software versions:

- Brocade Network Advisor
- vCenter Server 5.5
- vCenter Operations Manager 5.8

What's new in this document

This is a new document.

Document conventions

This section describes text formatting conventions and important notice formats used in this document.

Text formatting

The narrative-text formatting conventions that are used are as follows:

bold text	Identifies command names Identifies the names of user-manipulated GUI elements Identifies keywords and operands Identifies text to enter at the GUI or CLI
italic text	Provides emphasis Identifies variables Identifies paths and Internet addresses Identifies document titles
`code` text	Identifies CLI output Identifies command syntax examples

For readability, command names in the narrative portions of this guide are presented in mixed lettercase: for example, **switchShow**. In actual examples, command lettercase is all lowercase.

Notes, cautions, and warnings

The following notices and statements are used in this manual. They are listed below in order of increasing severity of potential hazards.

NOTE
A note provides a tip, guidance, or advice, emphasizes important information, or provides a reference to related information.

ATTENTION
An Attention statement indicates potential damage to hardware or data.

Key terms

For definitions specific to Brocade and Fibre Channel, see the *Brocade Glossary*.

For definitions of SAN-specific terms, visit the Storage Networking Industry Association online dictionary at:

http://www.snia.org/education/dictionary

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These references are made for informational purposes only.

Corporation	Referenced trademarks and products
VMware, Inc.	VMware

Additional information

This section lists additional Brocade and industry-specific documentation that you might find helpful.

Brocade resources

To get up-to-the-minute information, go to *http://my.brocade.com* to register at no cost for a user ID and password.

White papers, online demonstrations, and data sheets are available through the Brocade website at:

http://www.brocade.com/products-solutions/products/index.page

For additional Brocade documentation, visit the Brocade website:

http://www.brocade.com

Release notes are available on the MyBrocade website and are also bundled with the Fabric OS firmware.

Other industry resources

For additional resource information, visit the Technical Committee T11 website. This website provides interface standards for high-performance and mass storage applications for Fibre Channel, storage management, and other applications:

http://www.t11.org

For information about the Fibre Channel industry, visit the Fibre Channel Industry Association website:

http://www.fibrechannel.org

Document feedback

Quality is our first concern at Brocade and we have made every effort to ensure the accuracy and completeness of this document. However, if you find an error or an omission, or you think that a topic needs further development, we want to hear from you. Forward your feedback to:

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Provide the title and version number of the document and as much detail as possible about your comment, including the topic heading and page number and your suggestions for improvement.

Chapter

1 Installation

In this chapter

- Overview 1
- Installation 2
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Overview

You can use the Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite to collect SAN data (such as fabrics, switches, ports, and metrics) from a single Brocade Network Advisor server (data source). Once collected, the system analyzes the data by learning the behavior of the data, checking the data, and correlating the data. The system then stores the data in a repository. Based on this output, the system sends alerts to other applications (such as, SMARTS, e-mail, and SNMP traps.

NOTE
The Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite requires Professional Plus, Enterprise, or Headless editions. It is not supported with Brocade Network Advisor Professional edition.

Brocade Network Advisor feature limitations

Table 1 details the feature limitations based on the version of Brocade Network Advisor that you use for the data source.

TABLE 1 Brocade Network Advisor feature limitations

Brocade Network Advisor version	MAPS Events	Port metrics	Switch metrics	AG port metrics support
12.1.3 or earlier	No	Yes, but limited support. For more information, refer to "Port metrics" on page 9.	No	No
12.1.4 or later	Yes	Yes	Yes	No
12.2 or later	Yes	Yes	Yes	Yes

Installation

The Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite only manages data from one Brocade Network Advisor server; however, each Brocade Network Advisor server manages one or more fabrics. If you need to manage more than one Brocade Network Advisor server, you must create and Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite instance for each Brocade Network Advisor server. To install the adapter, refer to the *Install the Adapter in a vApp Installation* section in the *VMware vCenter Adapter Installation and Configuration Guide*.

Software requirements

- Brocade Network Advisor Professional Plus, Enterprise, or Headless editions
- vCenter Server 5.5
- vCenter Operations Manager 5.8

Configuring vCenter properties

Before you create the adapter instance, you must specify the IP address and credentials for the vCenter that is registered with the vCenter Operations Manager. The vCenter properties are specified in the vCenter.properties file.

1. Open the vcenter.properties file in a a text editor (such as Notepad).

   The vcenter.properties file is located in the /usr/lib/vmware-vcops/user/plugins/inbound/BrocadeFabricAdapter/conf directory on the Analytics virtual machine.

2. Configure the IP address and credentials for the vCenter that is registered with the vCenter Operations Manager using the following format:

   ```
   vcenter.server.1=<IP_address>
   vcenter.port.1=<port_number>
   vcenter.user.1=<user_name>
   vcenter.passwd.1=<password>
   ```

3. Select **File > Save**.

Creating the adapter instance

You must add a Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite adapter instance in vCenter Operations Manager for each embedded adapter.

Before creating an adapter instance, make sure you meet the following requirements.

- Make sure that the Brocade Network Advisor server is running and the SMI agent/CIMOM Server is listening.

NOTE
The Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite requires Professional Plus, Enterprise, or Headless editions. It is not supported with Brocade Network Advisor Professional edition.

- Make sure to specify the vCenter IP address and credentials in the vcenter.properties file.

To create the Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite adapter instance, complete the following steps.

1. Open the launch the vCenter Operations Manager custom user interface.
2. Select **Environment > Configuration > Adapter Instances**.

   The **Manage Adapter Instances** screen displays.
3. Select **vCenter Operations Standard Server** from the **Collector** list.
4. Select **Brocade Fabric Adapter** from the **Adapter Kind** list.
5. Click the **Add New Adapter Instance** icon.

   The **Add Adapter Instance** screen displays.

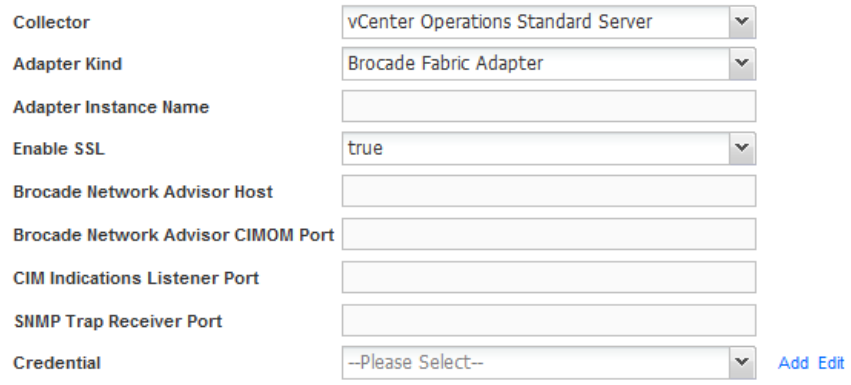

FIGURE 1 **Add Adapter Instance screen**

6. Type **Brocade_Management_PAK1** in the **Adapter Instance Name** field.
7. Select **true** from the Enable SSL list.
8. Enter the IP address for the Brocade Network Advisor server in the **Brocade Network Advisor Host** field.
9. Enter the CIMOM port number in the **Brocade Network Advisor CIMOM Port** field.
10. Enter the CIM Indications Listener port number in the **CIM Indications Listener Port** field.

11. Enter the SNMP Trap Receiver port number in the **SNMP Trap Receiver Port** field.
12. Select **BNA credentials** to use to sign on to the data source from the **Credential** list.

    If necessary, click **Edit** to modify the credentials.
13. (Optional) Click **Test** to test the adapter instance.
14. Click **OK** to save your configuration.

    Once created, the system queries the SAN fabric data from the Brocade Network Advisor server every 3 collection cycles. By default, the collection cycle is set to 5 minutes in vCenter Operations Manager.

Creating credentials

You must define credentials for each adapter instance. vCenter Operations Manager uses credentials to sign on to the Brocade Network Advisor data source.

To modify Brocade Network Advisor credentials, complete the following steps.

1. Select **Brocade Fabric Adapter** from the **Adapter Kind** list.
2. Select **Brocade Network Advisor Credentials** from the **Credential kind** list.
3. Enter BNA in the **Instance name** field.
4. Enter your user name in the **Brocade Network Advisor User** field.
5. Enter your password in the **Brocade Network Advisor Password** field.

Defining the collection interval

The collection interval for the adapter instance resource determines how often to collect data. You must define the collection interval for each adapter instance based on the Switch FC port count for the Brocade Network Advisor server.

Table 2 defines the collection intervals you should use based on the Switch FC port count.

TABLE 2 Collection intervals

Switch FC port count	Adapter collection interval
1000	5 minutes
1000 - 4000	10 minutes
4000 and above (maximum limit is 9000 including the device port)	15 minutes

To define the collection interval for an adapter instance, complete the following steps.

1. Select **Environment > Environment Overview**.
2. On the **List** tab, select the adapter instance for which you want to configure the collection interval.
3. Click the **Edit Resource** icon.

   The **Resource Management** dialog box displays.

4. Type the collection interval, in minutes, in the **Collection Interval (Minutes)** text box.
5. Click **OK** on the **Resource Management** dialog box to define the collection interval.

Brocade Network Advisor server

The Brocade Network Advisor server uses one device, called the seed switch, to discover all other devices in a fabric. If the seed switch or any other device in the fabric loose connectivity, segment, or becomes unreachable, one of the following actions may occur:

- Fabric split with both fabrics managed by single Brocade Network Advisor server

  This is a seamless operation. The Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite lists all resources the Health Tree and Resource Detail screens. When a switch leaves Fabric A to join Fabric B and both Fabric A and B are managed by a single BNA server, all resources displayed with the parent child relations set appropriately.

- Switch leaves a fabric managed by single Brocade Network Advisor server

  When a switch leaves the fabric for any reason, the switch resource changes to an Unknown state in the Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite. The adapter maintains state of all collected resources, even when the resources no longer exists for a minimum of 3 weeks. Collected resources are purged every three weeks. In this case, the switch resource stays in the Unknown state until it is purged. If the switch resource merges with the fabric, it changes back to a valid health state.

- Switch joins a fabric managed by single Brocade Network Advisor server

  When a new switch joins a fabric or a new fabric is discovered in the Brocade Network Advisor server, the new resources display in Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite with valid health states and relationships.

- Fabric splits and the new fabric is not managed by the Brocade Network Advisor server

  When a switch moves from Fabric A to Fabric B or when Fabric A splits into Fabric A and Fabric B and Fabric B is not managed by the Brocade Network Advisor server, all resources moved from Fabric A change to an unknown health state until purged (3 weeks).

- New Seed switch elected in the fabric

  When the seed switch for a fabric changes in Brocade Network Advisor and a new seed switch is elected, the new fabric resource, using the new seed switch WWN as the key for the fabric, displays in the adapter. The fabric resource with the old seed switch WWN changes to an Unknown health state until it is purged or becomes the seed switch for the fabric again.

- Seed switch segments from the existing fabric

  When a seed switch segments from the fabric, the fabric resource in the adapter remains the same. The switches that are not part of the new fabric will be set to an unknown health state. The switches that are part of this fabric will be set to a valid health state.

1 Brocade Network Advisor server

Chapter

2

Resources

In this chapter

- Resources overview 7
- Health Tree 7
- Fabric resources 8
- Switch resources 8
- FC Port resources 9

Resources overview

A resource is an entity in your network for which the Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite collects data. A resource can be a fabric, switch, host, storage, virtual machine (VM), or a container that holds other resources (such as, applications).

Health Tree

The health tree displays the relationship between various resources using a parent-child relationship. The Fabric resource is the parent for all switches that belong to the fabric and the Switch resource is the parent for the F-ports connected to end devices. E-ports on the switch display as a metric group or resource group on the Switch resource. The End Devices (such as Hosts, Virtual Machines (VM), and Storage devices) are parents of the Fabric resource. The end device data obtained from the Brocade Network Advisor data source is correlated with the Hosts and VMs known to the vCenter registered with vCenter Operations Manager. If the VM has a path to a Storage known to the vCenter and collected from the Brocade Network Advisor server, the Storage resource is displayed as a parent of the Fabric.

For FCR deployment, devices display as a storage device in the Initiator connected fabric link. Note that phantom switches do not display in the interface.

For FCIP deployment, Ve and Vex ports and tunnels do not display in the interface.

For Access Gateway (AG) deployment, AG switches display as a resource group. In the collection data, Switch Mode displays as Access Gateway and the Domain Id field is empty. If you are collecting data from Brocade Network Advisor 12.2 or later, data is collected for the AG ports. If you are collecting data from Brocade Network Advisor 12.1.X or earlier, data is not collected for AG ports and the value displays as zero.

Fabric resources

The Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite collects the following data for a fabric resource:

- Seed Switch IP Address — The IP address of the seed switch.
- Seed Switch WWN — The world wide name (WWN) of the seed switch. This is the resource key identifier for a fabric resource.
- Fabric Name — The name of the fabric in Brocade Network Advisor.
- Number of Switches — The number of switches in the fabric.
- Fabric WWN — The WWN of the principal switch in the fabric.

Switch resources

Switch resources display as children of the Fabric resource. The Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite collects the following data for a switch resources:

- Switch Name — The name of the switch. The switch name is configured on the device.
- Domain Id — The domain Id of the switch. This field is empty for Access Gateway devices.
- Fabric Name — The name of the fabric to which the switch belongs.
- Switch WWN — The WWN of the switch. This is the resource key identifier for a switch resource.
- Switch Mode — Whether the switch is in AG (Access Gateway) mode or normal mode.
- Switch IP Address — The IP address of the switch.
- Operational Status — The operational status of the switch (such as, Error, Degraded, OK, and No Contact).

Switch metrics

Click a switch in the Switch Resources List to display the switch metrics in the Metric Selector widget. The Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite collects the following metrics for switch resources:

- CPU Usage (%)
- Memory Usage (%)

FC Port resources

F-port resources display as children of the Switch resource. F-port metrics are resource attributes for the F-port resource. E-ports on the switch display as a metric group or resource group on the Switch resource. E-port metrics are a metric group or resource group on the Switch resource and each entry in this metric or resource group is the E-port WWN with the same set of port metrics.

The Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite collects the port WWN for a port resource. The port WWN is the resource key identifier for a port resource.

Port metrics

For Brocade Network Advisor instances running 12.1.3 or earlier, the Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite collects the following metrics for port resources:

- C3 Discards — The total number of class 3 frames that were discarded upon reception from the point of time the counter was reset.
- CRC Errors — The number of frames received in which the CRC in a frame does not match the CRC computed by the receiver. This count is part of the Link Error Status Block (LESB).
- Encoding Errors — The total number of disparity errors received at this port from the point of time the counter was reset.
- Link Failures — The number of times a link error occurred. This count is part of the Link Error Status Block (LESB).
- Rx % Utilization — The percentage of data received to the maximum amount of data that can be received
- Rx (MB/sec) — The total number of megabytes received from the point of time the counter was reset.
- Tx % Utilization — The percentage of data transmitted to the maximum amount of data that can be transmitted.
- Tx (MB/sec) — The total number of megabytes transmitted from the point of time the counter was reset.

For Brocade Network Advisor instances running 12.1.4 or later, the Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite collects the following additional metrics for port resources:

- BB Credit Zero — The total number of transitions in or out of BBcredit zero state. The other side is not providing any credit.
- C3 Discard Others — The total number of Class 3 frames discarded due to unknown reasons upon reception from the point of time the counter was reset.
- C3 Discard Rx Timeout — The number of Class 3 receive frames discarded due to timeout upon reception from the point of time the counter was reset.
- C3 Discard Tx Timeout — The number of Class 3 transmit frames discarded due to timeout upon reception from the point of time the counter was reset.
- C3 Discard Unreachable — The number of Class 3 frames discarded due to destination unreachable upon reception from the point of time the counter was reset.
- FEC Corrected Blocks — Indicates the FEC Corrected Blocks Count.

- FEC Uncorrected Blocks — Indicates the FEC Uncorrected Blocks Count.
- Invalid Ordered Sets — The total number of invalid ordered sets received at the port.
- Invalid Transmissions — The number of transmission words that had an invalid character (8b10b code violation) in one or more of its characters, had a K28.5 (8b10b control) in its second, third, or fourth character position, or had an incorrect Beginning Running Disparity. This count is part of the Link Error Status Block (LESB).
- Rx Link Resets — The total number of Link resets. This count is the number of link resets received.
- Sequence Errors — The total number of primitive sequence protocol errors that detected at this port. This count is part of the Link Error Status Block (LESB).
- Signal Losses — The number of times the signal is lost on the Port since the last device reset. This count is part of the Link Error Status Block (LESB).
- Sync Losses — The number of times that synchronization is lost on the Port since the last device reset. Synchronization is assumed lost which a timeout period (identified by the Receiver Transmitter Timeout property) is exceeded. This count is part of the Link Error Status Block (LESB).
- Truncated Frames — The total number of frames received at this port where the frame length was less than the minimum indicated by the frame header.
- Tx Link Resets — The total number of Link resets. This count is the number of link resets transmitted.

Chapter

SAN Event Handling 3

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- Event handling configuration 12

SAN events

The Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite displays Monitoring and Alerting Policy Suite (MAPS), Fabric, and Switch alerts received from the Brocade Network Advisor server. Before you can view event alerts, you must configure event handling for vCenter Operations Manager and Brocade Network Advisor (refer to "Event handling configuration" on page 12).

MAPS alerts

For switch resources, all MAPS violations on the switch display as an alert on the switch in the Health Tree for the violations received from switch or Brocade Network Advisor server. Click a switch in the Health Tree to display the alerts specific to the switch in the **Alerts** widget.

The Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite displays the following MAPS violations from the switch resources.

- Fabric Health violation — Monitors potential problems arising between devices, such as zone changes, fabric segmentation, downed E_Ports, fabric reconfiguration, domain ID changes, and fabric log ins.
- Traffic/Flow violation — Monitors the source and destination of traffic and flows.
- Switch FC Port violation — Monitors the number of violations for each product based on the selected fabric and a specified time range. There are four port health violation widgets: All, ISL, Initiator, and Target.
- Switch Policy Status violation — Monitors the health of the switch by defining the number of errors that transitions the overall switch state into a state that is not healthy. For example, you can specify a switch policy so that if a switch has two port failures, it is considered to be in a marginal state; if it has four failures, it is in a down state.
- Switch resource violation — Monitors the system RAM, flash, CPU, and memory.
- Switch Security violation — Monitors monitors different security violations on the switch and takes action based on the configured thresholds and their actions.

Fabric and switch alerts

The Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite displays the CIM event and SNMP trap alerts from the fabric and switch resources. The following table lists the CIM event and SNMP trap alerts that display and details the associated resource for each of the events with their type and severity level.

TABLE 3 Fabric and switch alerts

Name	Type	Level	Associated Resource
Zone DB Change event	CIM Indication	Informational	Fabric
Zone set Activate Event	CIM Indication	Informational	Fabric
Port Online	SNMP Trap	Informational	Switch
Port Offline	SNMP Trap	Critical	Switch
Bottleneck detected	SNMP Trap	Critical	Switch
Bottleneck cleared	SNMP Trap	Informational	Switch
Map Events	CIM Indication	Warning	Switch

Event handling configuration

You must configure vCenter Operations Manager and Brocade Network Advisor to enable event handling so that the adapter receives events from Brocade Network Advisor. You should also make sure that devices are configured to send traps to Brocade Network Advisor. For vCenter Operation Manager, the SNMP port is specified when you create the adapter instance (refer to "Creating the adapter instance" on page 3).

Configuring vCenter Operations Manager for event handling

You must configure the TCP and UDP ports in the firewall configuration (vcopsfirewall.conf) file located in the /usr/lib/vmware-vcops/user/conf/install/ directory of the Analytics virtual machine

1. Open the vcopsfirewall.conf file in a text editor (such as Notepad).
2. Add the TCP and UDP ports port numbers (any number where socket can be opened) using the following format:

   TCPPORTS="$TCPPORTS 5999" (TCP Ports)

   UDPPORTS="$UDPPORTS 16200" (UDP ports)
3. Select **File > Save**.
4. Open a command prompt on the Analytics virtual machine and run the following commands:
   - `service vcops restart collector`
   - `/etc/init.d/vcopsfirewall restart`

Configuring Brocade Network Advisor event handling

You need to configure Brocade Network Advisor to forward SNMP events and traps to the vCenter Operation Manager SNMP listening port.

1. Select **Monitor > SNMP Setup > Trap Forwarding**.

   The **SNMP Trap Forwarding** dialog box displays.

2. Select the **Enable trap forwarding** check box.
3. Click **Add** in the **Destinations** area to add the vCenter Operation Manager Analytics virtual machine as the trap recipient.

   The **Add Trap Destination** dialog box displays.

4. Enter **vCOPs Trap Forward** in the Description field.
5. Enter the IP address of the vCenter Operation Manager Analytics virtual machine in the **IP Address** field.

   This is a mandatory field. IPv4 and IPv6 addresses are accepted, but a DNS name is not accepted.

6. Enter the SNMP trap listening port of the recipient in the **Port #** field.

   This is a mandatory field. Valid numeric values range from 1 through 65535.

   The **Enable** check box, **Add Source Address** check box, and **SNMP Trap Repeater** check box are selected by default. When selected, all traps, whether the source is managed or unmanaged, are forwarded. When unselected, only traps from the selected products are forwarded. When selected, the Open View Source Name is added to the variable binding (varbind) value to the trap before forwarding.

7. Select a supported SNMP type from the **Trap Forwarding Type** list.

   Supported SNMP types are v1, v2c, and v3. The default SNMP type is v1.

8. Select **snmp traps for vcops** in the **Available Filters** list and click the right arrow button to move them to the **Selected Filters** list.
9. Click **OK** on the **Add Trap Destination** dialog box.
10. Click **Add** in the **Trap Filters** area of the **SNMP Trap Forwarding** dialog box.

    The **Add Trap Filter** dialog box displays.

11. Enter **snmp trap for vcops** in the **Filter Name** field.
12. Select **Warning** from the **Severity** list.

    Traps with the selected severity and those with higher severity levels are forwarded. By selecting Warning traps with Warning, Error, Critical, Alert, and Emergency severity levels are forwarded.

13. Select the **SAN** tab.

    The products available to which you can add a trap filter display in the **Available Products** list.

14. Select the products you want in the **Available Products** list and click the right arrow button to move them to the **Selected Products** list.

    By default, all traps are listed in the **Available Traps** list, under the folders for the MIB to which they belong.

15. Select the **MIB Alias** check box to display trap aliases.
16. Select **BD-MD** and **SW-MB** from the **Available Trap Type** list and click the right arrow button to move them to the **Selected Trap Type** list.
17. Click **OK** on the **Add Trap Filter** dialog box.

    SNMP Traps and Syslog messages from the selected switches or fabric will now be forwarded to the configured destination server.
18. Click **OK** on the **SNMP Trap Forwarding** dialog box.

Configuring devices for event handling

1. Login to the device.
2. Use the **snmptraps –send** *-trap_name* **bd-trap** to send bottleneck traps.

   To remove an old bottleneck event from the interface, use the **snmptraps –send** *-trap_name* **bd-clear-trap** to clear bottleneck traps.
3. Use the **snmpconfig –show snmpv1** command to make sure that the v1 traps are forwarded to Brocade Network Advisor.

   If the Brocade Network Advisor server does not display in the list, use the **snmpconfig –set snmpv1** command to add it.
4. Use the **snmpconfig –show snmpv3** to make sure that the v3 traps are forwarded to Brocade Network Advisor.

   If the Brocade Network Advisor server does not display in the list, use the **snmpconfig –set snmpv3** command to add it.

Verifying alerts

When you complete configuration of vCenter Operations Manager, Brocade Network Advisor, and any devices for event handling, generate events in Brocade Network Advisor to verify the alerts in the vCenter Operations Manager.

Chapter

4

SAN Dashboards

In this chapter

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- Brocade - SAN Troubleshooting dashboard 16
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Brocade troubleshooting dashboard overview

The Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite comes with custom dashboards for troubleshooting. You can access these dashboards from the Dashboards menu. To view a dashboard, select **Dashboard >** *dashboard_name* (where *dashboard_name* is one of the following options:

- **Brocade - SAN Troubleshooting**
- **Brocade - VM Troubleshooting**
- **Brocade - SAN Utilization**
- **Brocade - Health Overview**

Brocade - SAN Troubleshooting dashboard

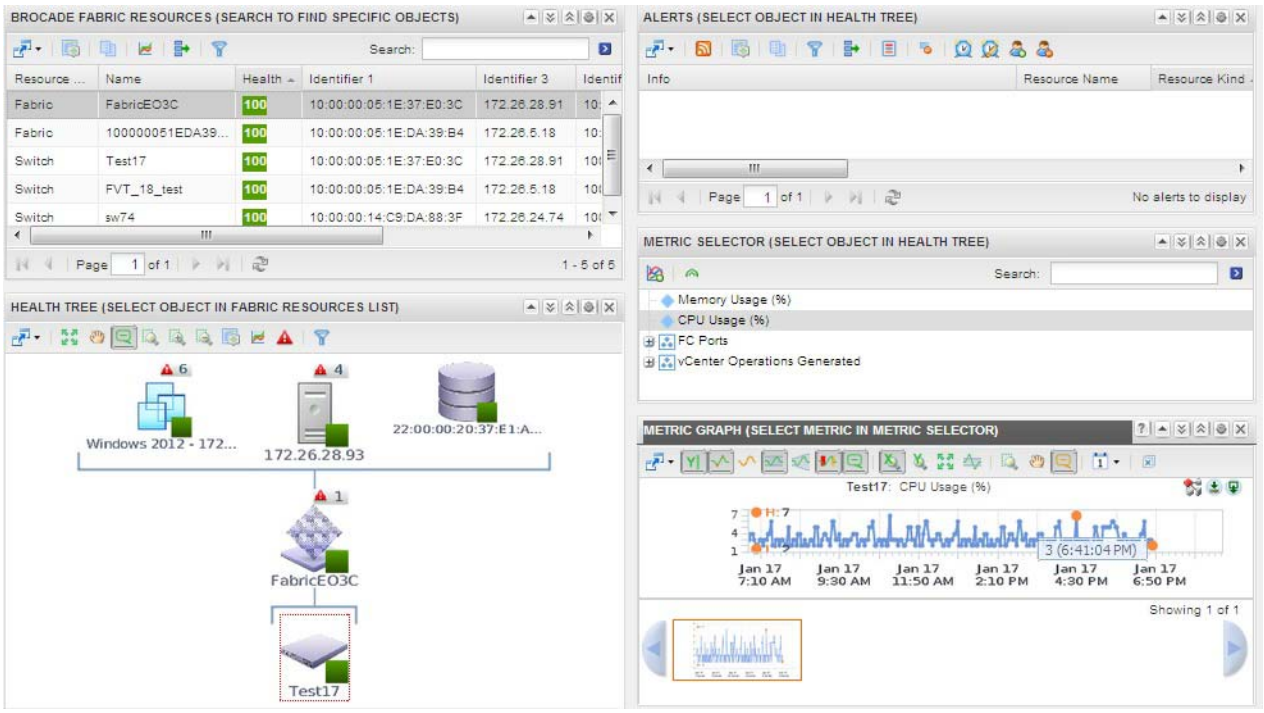

FIGURE 2 Brocade - SAN Troubleshooting dashboard

The **Brocade - SAN Troubleshooting** dashboard contains the following widgets:

- **Brocade Fabric Resources** widget — This widget displays all fabric and switch resources collected by the adapter. Select a resource in this widget to populate the **Health Tree** widget.
- **Health Tree** widget — This widget displays the relationship of the selected resource to other resources in the fabric. Select a resource in this widget to populate the **Alerts** and **Metric Selector** widgets.
- **Alerts** widget — This widget displays outstanding alerts (dynamic and hard threshold violations and informational alerts sent by the server) for the selected resource.
- **Metric** Selector widget — This widget displays the metrics available for the selected resource. Select a resource in this widget to populate the **Metric Graph** widget.
- **Metric Graph** widget — This widget shows graphs for the selected metric.

Brocade - VM Troubleshooting dashboard

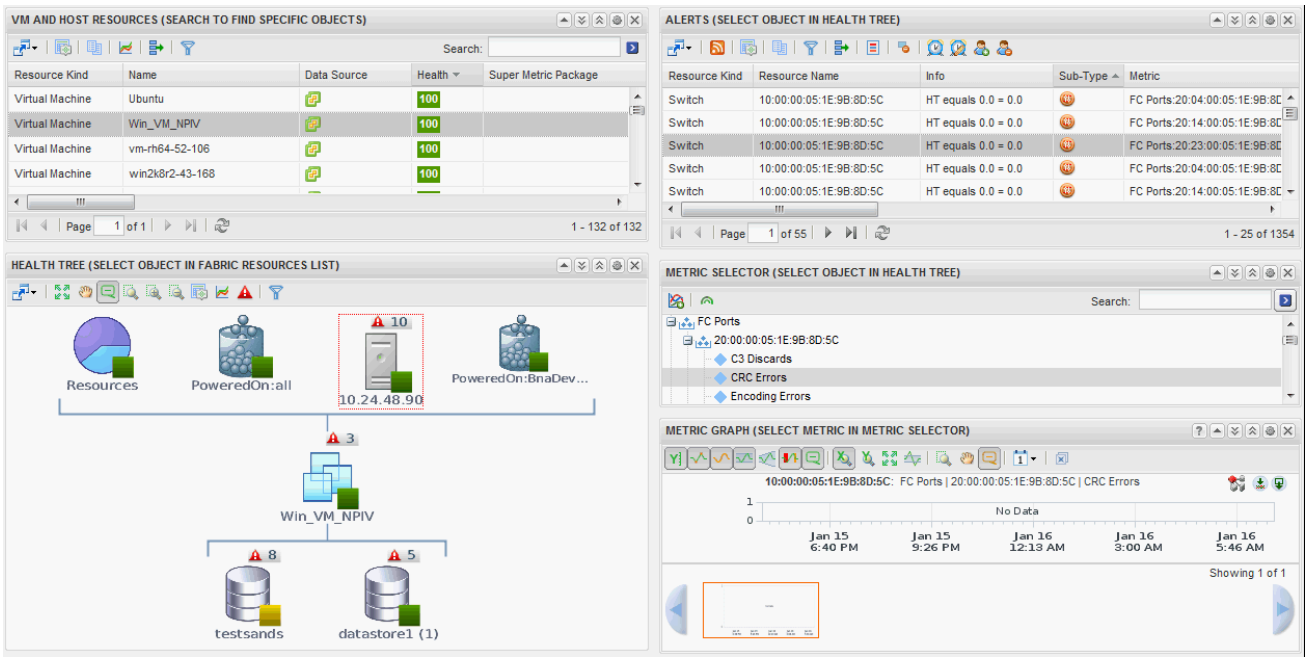

FIGURE 3 **Brocade - VM Troubleshooting Dashboard**

The **Brocade - VM Troubleshooting** dashboard contains the following widgets:

- **Brocade VM Resources** widget — This widget displays all virtual machine resources collected by the adapter. When you select a virtual machine connected to a fabric, the fabric connectivity displays in the **Health Tree** widget.
- **Health Tree** widget — This widget displays the relationship of the selected resource to other resources in the fabric. Select a resource in this widget to populate the **Alerts** and **Metric Selector** widgets.
- **Alerts** widget — This widget displays outstanding alerts (dynamic and hard threshold violations and informational alerts sent by the server) for the selected resource.
- **Metric Selector** widget — This widget displays the metrics available for the selected resource. Select a resource in this widget to populate the **Metric Graph** widget.
- **Metric Graph** widget — This widget shows graphs for the selected metric.

Brocade - SAN Utilization dashboard

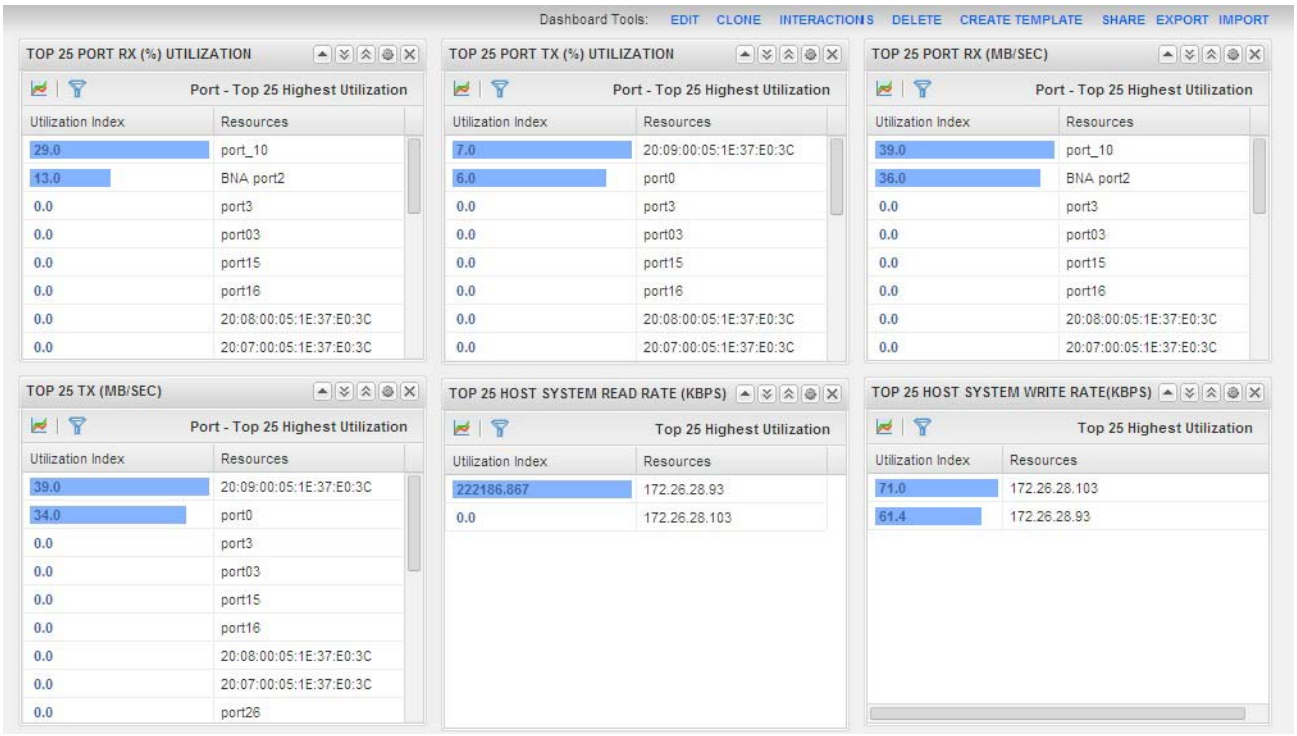

FIGURE 4 Brocade - SAN Utilization dashboard

The **Brocade - SAN Utilization** dashboard contains the following widgets:

- **Top 25 Port Rx % Utilization** widget — This widget displays the 25 ports with the highest percentage of received data to the maximum amount of data that can be received
- **Top 25 Port Tx % Utilization** widget — This widget displays the 25 ports with the highest percentage of transmitted data to the maximum amount of data that can be transmitted.
- **Top 25 Port Rx (MB/sec)** widget — This widget displays the 25 ports with the highest number of megabytes received from the point of time the counter was reset.
- **Top 25 Port Tx (MB/sec)** widget — This widget displays the 25 ports with the highest number of megabytes transmitted from the point of time the counter was reset.
- **Top 25 Host System Read Rate (KBPS)** widget — This widget displays the 25 host systems with the highest disk read rate in KiloBytes per second (KBps).
- **Top 25 Host System Write Rate (KBPS)** widget — This widget displays the 25 host systems with the highest disk write rate in KiloBytes per second (KBps).

Brocade - Health Overview dashboard

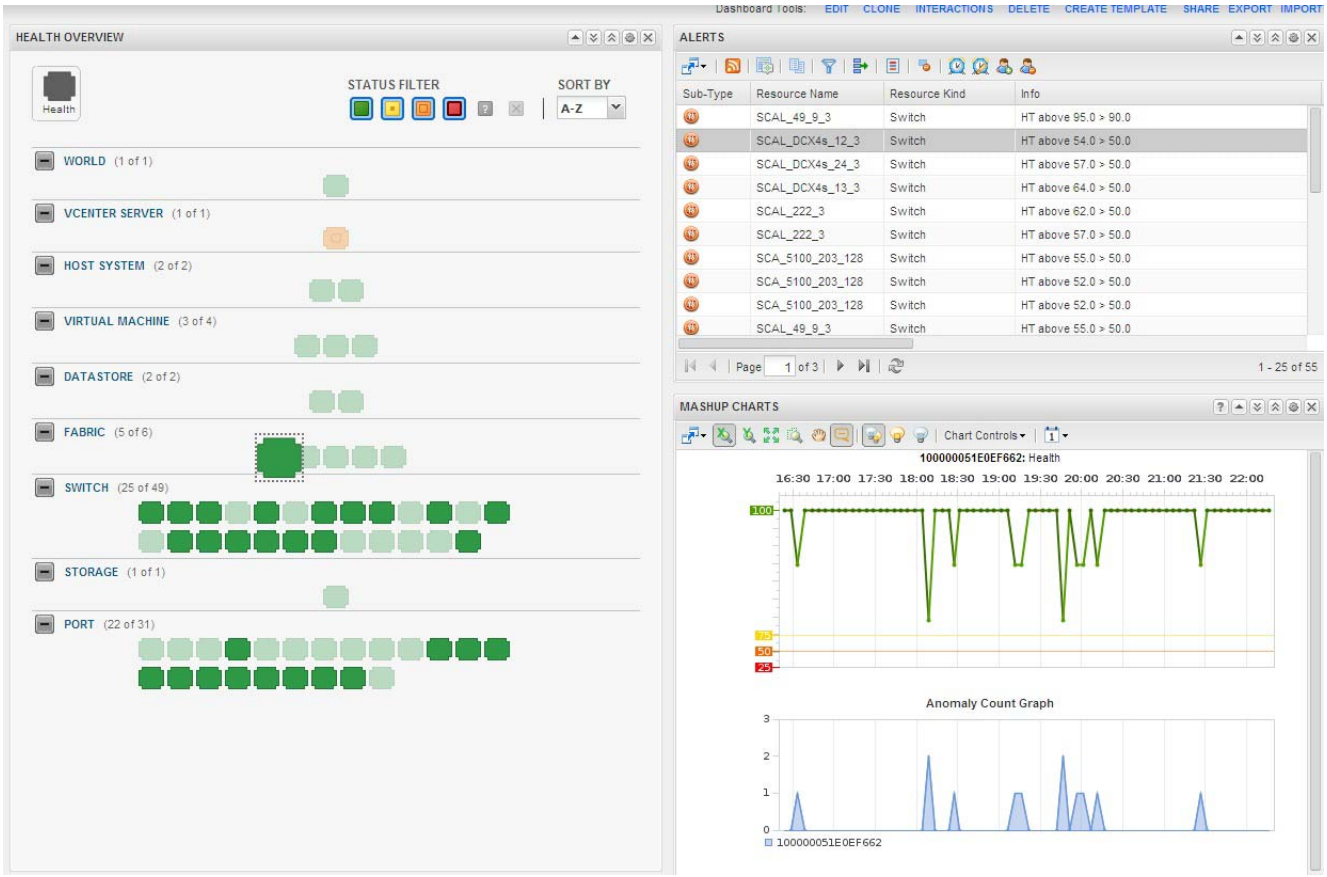
HEALTH OVERVIEW
Health
STATUS FILTER
SORT BY
A-Z
WORLD (1 of 1)
VCENTER SERVER (1 of 1)
HOST SYSTEM (2 of 2)
VIRTUAL MACHINE (3 of 4)
DATASTORE (2 of 2)
FABRIC (5 of 6)
SWITCH (25 of 49)
STORAGE (1 of 1)
PORT (22 of 31)
Dashboard Tools: EDIT CLONE INTERACTIONS DELETE CREATE TEMPLATE SHARE EXPORT IMPORT
ALERTS
Sub-Type Resource Name Resource Kind Info
SCAL_49_9_3 Switch HT above 95.0 > 90.0
SCAL_DCX4s_12_3 Switch HT above 54.0 > 50.0
SCAL_DCX4s_24_3 Switch HT above 57.0 > 50.0
SCAL_DCX4s_13_3 Switch HT above 64.0 > 50.0
SCAL_222_3 Switch HT above 62.0 > 50.0
SCAL_222_3 Switch HT above 57.0 > 50.0
SCA_5100_203_128 Switch HT above 55.0 > 50.0
SCA_5100_203_128 Switch HT above 52.0 > 50.0
SCA_5100_203_128 Switch HT above 52.0 > 50.0
SCAL_49_9_3 Switch HT above 55.0 > 50.0
Page 1 of 3
1 - 25 of 55
MASHUP CHARTS
Chart Controls
100000051E0EF662: Health
16:30 17:00 17:30 18:00 18:30 19:00 19:30 20:00 20:30 21:00 21:30 22:00
100
75
50
25
Anomaly Count Graph
3
2
1
0
100000051E0EF662

FIGURE 5 **Brocade - Health Overview dashboard**

The **Brocade - Health Overview** dashboard contains the following widgets:

- **Health Overview** widget — This widget displays an overview of the current operational status for each resource (such as host or fabric) as a colored health badge. The operational status health badges include Good (green), Abnormal (yellow), Degraded (orange), Bad (red), Unknown (grey with a question mark), and Offline (grey with an X). Select a fabric widget to populate the **Alerts** and **Mashup Charts** widgets.
- **Alerts** widget — This widget displays outstanding alerts (dynamic and hard threshold violations and informational alerts sent by the server) for the selected resource.
- **Mashup Charts** widget — This widget displays the health and anomaly count graphs for the selected resource.

Building a Brocade dashboard

When your user account is created, a vCenter Operations Manager administrator assigns you to one or more user groups. These user groups determine which dashboards are available to you when you first log in to vCenter Operations Manager. However, if the predefined dashboards do not meet your needs, you can create a custom dashboards.

To create a new dashboard, complete the following steps.

1. Select **Dashboards > Add**.
2. Add widgets to the dashboard by dragging each widget from the left pane to the right pane.

   For more information about widgets, refer to Chapter 4, *Using and Configuring Widgets* in the *VMware vCenter Operations Manager Getting Started Guide - Custom User Interface*.
3. Select the number of columns (1, 2, or 3) to use on the dashboard from the **Select Layout** drop-down menu.
4. (Optional) To change the size of the columns, drag the divider bars under **Drag to Change Layout**.
5. Type a name for the new dashboard in the **Tab Name** text box.

   To make the new dashboard appear in a group in the **Dashboards** menu, use the following syntax for the dashboard name.

   ```
   dashboard-group/dashboard-name
   ```

   Where *dashboard-group* is the name of a dashboard group and *dashboard-name* is the name of the new dashboard. If the dashboard group already exists, the new dashboard appears in the existing group. If the dashboard group does not already exist, vCenter Operations Manager adds it. You can nest dashboard groups by typing multiple dashboard group names, for example, *dashboard-group/dashboard-group/dashboard-name*

   NOTE
   Only the *dashboard-name* appears in the Dashboard menu and on the dashboard tab.
6. (Optional) Make the new dashboard your default dashboard by selecting **Yes** next to **Mark as Default**.
7. Click **OK** to save your changes.

   For more information about building and managing dashboards, refer to Chapter 3, *Designing Your Workspace* in the *VMware vCenter Operations Manager Getting Started Guide - Custom User Interface*.

Adding resource kinds

You must add one or more of the following resource kinds to the Resource widget:

- Fabric
- Switch
- Port
- Storage

To add resources to the widget, complete the following steps.

1. Click the **Edit Resources** icon on the Resource widget's toolbar.
2. Select one or more of the resource kinds (see list above) in the **Select which tags to filter** list to configure the Resources widget to show only resources that have these tag values.

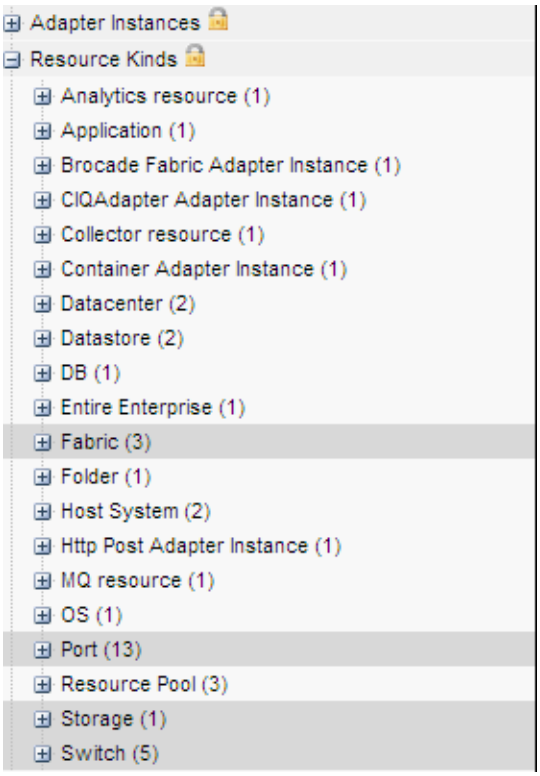

FIGURE 6 Select which tags to filter list

3. Click **OK** to save your changes.

   For more information about configuring individual widgets, refer to Chapter 4, *Using and Configuring Widgets* in the *VMware vCenter Operations Manager Getting Started Guide - Custom User Interface*.

Editing the widget name

You can customize the name of a widget to make it more meaningful to you.

To customize a widget name, complete the following steps.

1. Click the **Edit Resources** icon on the widget's toolbar.
2. Type another name in the **Widget** title text box to customize the name of the widget.
3. Click **OK** to save your changes.

   For more information about editing widgets, refer to Chapter 4, *Using and Configuring Widgets* in the *VMware vCenter Operations Manager Getting Started Guide - Custom User Interface*.

Launch in context support for Brocade Network Advisor

NOTE
Launch in context is not supported on Brocade Network Advisor headless version.

The Brocade SAN Analytics Management Pack for VMware vCenter Operations Management Suite enables you to launch Brocade Network Advisor for fabrics, switches, and switch ports from the following page and widgets:

- Environment Overview page
- Resource Detail page
- Resources widget
- Health Tree widget

To launch Brocade Network Advisor, complete the following steps.

1. Select a fabric, switch, or switch port from the Environment Overview page, Resource Detail page, Resources widget, or Health Tree widget.

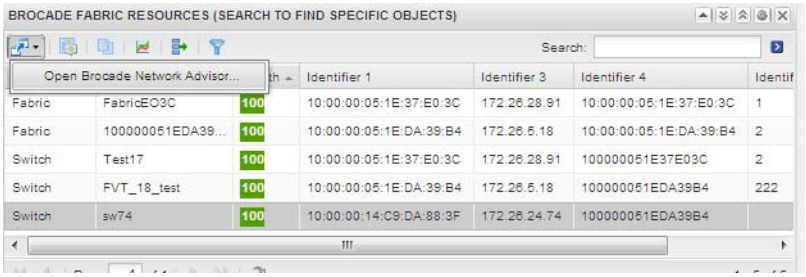

FIGURE 7 **Launch in context list**

2. Click the **Open in external application** icon on the toolbar and select **Open Brocade Network Advisor** from the list.